Login : Jurnal Teknologi Komputer
ISSN : 2302-9692 (print) | 2723-8695 (online)
Vol. 15, No. 1, June 2021, Page 41-44
http://login.seaninstitute.org/index.php/Login

Prediction System of The Number of Receiving Police Members Using The Method Analysis of Variance (Anova) (Study Case: Polda Sumut)

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Article Info

Article history:

Received Apr 27, 2021
Revised Mei 27, 2021
Accepted Jun 28, 2021

Keywords:

Number of admissions,
Police force,
Anova method,
SPSS.

A B S T R A C T

The number of police recruits in North Sumatra is an event that can provide opportunities for the Indonesian people to be able to achieve their goals of becoming a police officer, because being a police officer is a dream that many people want, because the task of a police officer is very noble because the task The police is to protect and serve and protect the community. In this study, a prediction system will be made to find out how many police officers receive each year. The object of this research is the North Sumatra Police Chief. This study uses the Anova method, namely the two way ANOVA procedure which is classified by using statistical product and service solutions (SPSS) version 16 to determine the acceptance of prospective members of the police from year to year. One of the supporting factors in the acceptance of prospective members of the police is the ability of the intelligence level of prospective members to be seen from year to year.

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1. INTRODUCTION

Being a police officer is a very noble job because it serves as a servant of the state, maintains state security, regulates order and law. Becoming a police officer is not easy because apart from having health and a healthy body. The police must also be smart and agile, because they must be ready in all conditions, even threatening emergency conditions.

Prediction is a process of systematically estimating something that is most likely to happen in the future based on past and present information that is owned, so that the error (difference between something that happens and the forecast results) can be minimized. Prediction does not have to give a definite answer to what will happen, but tries to find an answer as close as possible to what will happen. In predicting a problem, especially the number of police admissions, it is quite difficult where the number of receipts will definitely be difficult to determine.

The higher the interest of the Indonesian people in wanting to become a police officer, it is very difficult to determine the number of admissions to members of the police for each year, because the number of admissions to the police each year sometimes decreases and also increases. In determining the number of admissions to members of the Police, there are several factors that are very influential in the acceptance of members of the Police for each year, namely, the criminal factor is the higher the number of criminals that occur in North Sumatra, the number of admissions to members of the Police that will be needed is also higher, but if the number of criminals in North Sumatra is low, the number of police recruits needed is not much. As for other factors that influence

the acceptance of members of the Police, such as the police retirement period factor and the regional expansion factor.

Therefore, the author wants to predict the number of police officers to find out how many people it takes to become a police officer who will be accepted every year. To predict the number of receipts, the authors use a computer and software as the most efficient tool for researching the prediction system.

Analysis of Variance (ANOVA) is a method to describe the total diversity of data into components that measure various sources of diversity. ANOVA is used when there are more than two variables. In Indonesian literature this method is known by various other names, such as analysis of variance, variance, and analysis of variance.

Hamidah Aprilia (2013), "Anova (Analysis Of Variance) In Cereal Products". ANOVA is a statistical analysis that is often used to check the difference in the average value of two or more data groups. In general, there are two applications of ANOVA, namely hypothesis testing and estimation.

In this ANOVA analysis, a two-way ANOVA procedure is used which is often called the design of a factor which is one of the two-way ANOVA analysis tools. ANOVA is a method of testing hypotheses and predictions whose results can be interpreted. By using ANOVA, whether there is a significant difference between the predicted value and the observed data will be easy to see.

2. RESEARCH METHOD

The methods used to conduct research are:

a. Field (field research)
   The author immediately had the space to do research on the North Sumatra Police, to find out clearly and in detail the problems faced.
b. Interview (Interview)
   The author directly conducted interviews with the police about the activities and the workings of the current system.
c. Study literature (Library Research)
   Information is done by studying various literatures obtained from books and journals as well as the use of internet media related to the material under study.
d. Data Collection (Observation)
   Field research by making direct observations to the object that is the target of research. Researchers act as data collectors, while the police as data providers. The data is tabulated and processed in the form of tables and figures which will eventually be analyzed quantitatively through statistical calculations.
e. System Design
   At this stage, a system design will be carried out consisting of flowchart design, interface design, and output.
f. Testing
   Conduct testing on the object under study to see the results of the object under study.

3. RESULTS AND DISCUSSION

3.1. Settlement Analysis Using the Analysis of Variance (ANOVA) Method

Analysis of Variance (ANOVA) is a method to describe the total diversity of data into components that measure various sources of diversity. ANOVA is used when there are more than two variables. In Indonesian literature this method is known by various other names, such as analysis of variance, variance, and analysis of variance. ANOVA is an extension of the Behrens-Fisher problem, so the F-test is also used in decision making. Analysis of variance was first introduced by Sir Ronald Fisher, the father of modern statistics. In practice, analysis of variance can be a hypothesis test (more often used) or an estimate (estimation, especially in the field of applied genetics). In general, analysis of variance tests two variances (or variances) based on the null hypothesis that the two variances are equal. The first variance is the variance between samples (among samples) and the second variance is the variance within each sample (within samples). With such an idea, ANOVA with two samples will give the same results as the t-test for the two means (means).

ANOVA is relatively easy to modify and can be developed for various forms of more complicated experiments. If the step of testing the average difference is taken one by one (with a t test) it will take time, a lot of energy. in addition, will run the risk of being wrong. For this reason, an analysis method that contains smaller errors and can save time and energy has been found, namely with ANOVA (Analysis of Variances) basically sample patterns can be grouped into:

1. All samples, both those in the first group to those in the other groups, come from the same population. for this condition the null hypothesis is limited to no effect of treatment.
2. The sample in group one comes from a different population from the sample population in the other group. for this condition the null hypothesis can be read: there is no treatment effect between groups.

Statistics on the number of admissions to police officers each year have increased and decreased.

Tahun Ajaran	Jenis Kelamin		Jumlah penerimaan
	Laki-laki	Perempuan	
2011/2012	64	6	70
2012/2013	241	0	241
2013/2014	879	16	895
2014/2015	517	278	795
Total	1701	300	2001

3.2. Application of the Anova Method

Application of the Anova Method:

1. ANOVA = Different test > 2 mean
2. It is not recommended to use the alpha value inflation t ok test
3. 1-(1-a)
4. Recommended f . test

Completion of receipts:

1. Hypothesis
   a. H0 = The four school years have the same level of difficulty.
   b. H1 = At least one is not equal.
2. = 0.05
3. Two way Anova table
4. Completion of JKT, JKB, JKK and JKG:
   a. Sum of total squares

$$\text{JKT} = \sum_{i=1}^{r}\sum_{j=1}^{k} X_{ij}^{2} - \frac{T_{**}^{2}}{rk}$$

$$= (64^2 + 241^2 + 879^2 + 517^2 + 6^2 + 0^2 + 16^2 + 278^2) - \frac{2001^2}{8}$$

$$= 1179683 - 500500.125 = 679182.875$$

   b. Number of Squares of Rows

$$\text{JKB} = \sum_{i=1}^{r} \frac{T_{i*}^{2}}{r} - \frac{T_{**}^{2}}{rk}$$

$$= \frac{70^2 + 241^2 + 895^2 + 795^2}{4} - \frac{2001^2}{8} = \frac{1496031}{4} - \frac{4004001}{8}$$

$$= 374007.75 - 500500.13 = -126492.38$$

   c. Number of Squares of Columns

$$\text{JKK} = \sum_{i=i}^{k} \frac{T_{*j}^{2}}{k} - \frac{T_{**}^{2}}{rk}$$

$$= \frac{1701^2 + 300^2}{2} - \frac{2001^2}{8} = \frac{2983401}{2} - \frac{4004001}{8}$$

$$= 1491700.5 - 500500.125 = 991200.375$$

d. Number of Squares Error

JKG = JKT – JKB – JKK
= 679182.875 – -126493.13 – 991200.375
= -185524.37

4. CONCLUSION

Crime is the most dominant factor in determining the number of admissions to police officers in addition to the police retirement period, The implementation of the ANOVA method in predicting the number of police recruits each year tends to increase. The two way ANOVA procedure can help determine the comparison of the number of receipts from year to year.

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